Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Preparation for International	)	
Telecommunication Union World	)	IC Docket No. 94-31
Radiocommunication Conferences	)	

To: The Commission

COMMENTS OF THE ASSOCIATION OF AMERICAN RAILROADS

The Association of American Railroads ("AAR"), by its attorneys and pursuant to Section 1.429 of the rules of the Federal Communications Commission ("the Commission"), hereby submits its comments in response to the Second Notice of Inquiry in the above-captioned proceeding, released January 31, 1995 (hereinafter "Notice").

I. Background and Statement of Interest

In its initial comments filed in response to the First Notice of Inquiry, AAR pointed out that its member railroads rely on sophisticated and comprehensive communications systems to enhance the safety and reliability of train movements and other railroad operations. Given the railroad industry's critical dependence on radio communications and AAR's role as frequency coordinator with respect to the operation of land mobile and other radio-based services, AAR has a vital interest in the preparation for World Radiocommunication Conferences and, most immediately, the upcoming WRC-95. AAR has been extensively

involved in deliberations concerning domestic as well as international frequency allocations.[1/] AAR welcomes the opportunity to comment on issues of such particular concern to the railroad industry.

II. New MSS Allocations in the Land Mobile Bands Below 1 GHz Should Not be Made Until Sharing Studies Have Been Conducted.

The Commission has requested comment on the proposal by the non-voice, non-geostationary MSS proponents (NVNG-MSS) who intend to operate below 1 GHz. Second Notice at paras. 56-58. Specifically, NVNG-MSS proponents have indicated a need for at least an additional 10 MHz of spectrum available for use by the year 2000, and for an additional 13-20 MHz by the year 2010. Second Notice at para. 56. In this regard, the Informal Working Group No. 2 ("IWG-2") of the Industry Advisory Committee ("IAC") has identified candidate bands in three priorities which, it claims, may be suitable for these operations. Included in the "Priority Two" category are frequencies in the 157.0375-174 MHz

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1/ The North American railroad industry has a particular and significant interest in the inter-relationship between domestic frequency allocations and the ITU Radio Regulations. Approximately 30% of the VHF land mobile radio frequencies allocated to the Railroad Radio Service by Section 90.91 of the Commission's Rules are used for various maritime operations elsewhere in the world pursuant to Appendix 18 of the Radio Regulations. It is vital that these frequencies remain available in the U.S. for use by the railroad industry.

band, the 450-460 MHz band, and the 470-512 MHz band.[2/] According to IWG-2, these are bands "with which the MSS service can successfully share."[3/] AAR respectfully disagrees with the assessment of IWG-2 regarding the prospect of sharing in these bands. In AAR's view, the feasibility of such sharing has not been demonstrated and, until it has been, no new allocations for NVNG-MSS co-primary use of these bands should be recommended or supported by the United States at WRC-95.

IWG-2's Priority Two bands have been allocated in the U.S. for the Private Land Mobile Radio Services pursuant to Part 90 of the Commission's rules. The terrestrial usage in the Priority Two bands is extremely heavy, not only for the frequencies allocated for sharing within the railroad industry, but by all users in the Private Land Mobile Radio Services. These bands are very heavily used by police and fire departments, utilities, railroads, petroleum companies, taxicabs, general business users, motion picture studios, trucking companies, the forestry industry and others -- to name just a few -- to support day-to-day business operations and public safety missions. There are over 16 million transmitters operating in these bands in the U.S., with an aggregated embedded cost of over $25 billion.[4/] Indeed, frequency congestion has been a major problem for these users,

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2/ IAC Interim Report at 82-83.

3/ Id. at 67.

4/ Presentation by Land Mobile Communications Council to Federal Communications Commission on March 1, 1995.

especially in and around metropolitan areas, and the Commission has been considering various proposals for the past several years in PR Docket No.92-235 to re-channelize these bands so as to relieve the severe shortage of channel capacity experienced by business, transportation, industrial and public safety users.

The use of these land mobile frequencies in the U.S. is generally on a shared basis, with sharing occurring not only within specified industry groups but also between and among different industry groups. Sharing is based on frequency coordination that is performed by FCC-approved coordinating entities which generally function within a particular industry or public safety group. The AAR is the frequency coordinating entity for the Railroad Radio Service, whose designated frequencies are set forth at Section 90.91 of the Commission's rules.

It has been suggested by NVNG-MSS proponents in the course of U.S. preparations for the WRC-95 Conference Preparatory Meeting commencing on March 22, 1995, that the land mobile bands are good candidates for sharing because their use is "intermittent,"[5/] presumably referring to the "push-to-talk" characteristic of many simplex land mobile radio systems. But merely because the predominant use of these bands may be in the simplex mode does not mean that there is sufficient available spectrum lying fallow within the bands to accommodate NVNG-MSS

5/ See, e.g., Document U.S.A. CPM-1 (Rev. 1).

use. These frequencies are used for operational support of underlying business or industrial or public safety functions, such that the usage is very often almost constant in nature, even outside of congested urban areas. For example, radio is the principal means of minute-to-minute communications in the railroad industry for coordinating the continual movement of locomotives and rail cars in classification yards where trains are assembled and disassembled. The use of a radio channel in that setting is not "intermittent" in the least -- there is almost constant on-the-air dialogue among the yardmaster in the tower, the engineers in the locomotives, and the crews on the ground as cars are pushed, pulled, sorted and moved throughout the train-making process.

And even when the use is not constant -- as with the "road" channels used in the railroad industry for communication between dispatchers and train engineers -- it is essential that the channel be kept clear and free of interference during the periods between use so that the channel will always be available for communications in an emergency.

Furthermore, the frequencies in the Private Land Mobile Radio Service, including those allocated for the Railroad Radio Service, are not used only for "push-to-talk" voice communications. Increasingly, there are many data and telemetry applications -- many of which are vital for safety-related functions. The following are three specific examples which demonstrate the vital importance of an interference-free

environment for the use of these frequencies for data applications by the railroad industry:

- Radio facilities operating in the 160 MHz band are used by railroads to relay critical safety-related information from trackside defect-detection devices to dispatchers and train crews.

- Devices affixed to the ends of trains operate in the 450 MHz band to relay critical train operation information (such as brake pressure status) to crew members in locomotives.

- Frequencies in the 450 MHz band are used throughout the railroad industry for precision control and coordination of "distributed power" -- which involves use of unmanned locomotives in the mid-section of a train which are remotely controlled from the front of the train -- a common practice for trains exceeding one mile in length in areas with long and steep mountain grades.

Additional information is set forth in the Attachment to these Comments which shows the scope and breadth of railroad uses of frequencies within IWG-2's Priority Two bands and which demonstrates the consequent importance of these bands to the efficient and safe functioning of the nation's railroads.

It has not been established that the spectrum sharing protocols established for the existing NVNG-MSS service would be possible or feasible here, given the extremely heavy and generally non-intermittent nature of the use of the Priority Two bands. The work done by previous NVNG-MSS applicants within the ITU-R regarding sharing feasibility for the initial allocation in 1992 is not relevant or applicable to the heavily-used Priority Two bands. For IWG-2 to posit that these are bands with which the NVNG-MSS service "can successfully share,"[6/] is to give an inaccurate and unduly optimistic assessment of the sharing prospects. Indeed, it ignores the more pessimistic assessment by Task Group 8/3 with respect to the sharing possibilities for NVNG-MSS in bands similar to these. Task Group 8/3 has stated that the growth of "high density land mobile applications will make the relevant bands difficult to share between land mobile services and the MSS." (See Document 8-3/18, Working Group A of Task Group 8/3, Toronto, July 1994, emphasis added.) And it also ignores the conclusion of the IAC itself that some of the existing NVNG-MSS allocations are inadequate because they are not readily shareable owing to the fact that they are "heavily used by the existing terrestrial services ..."[7/]

Moreover, it appears that the use of brief duration messaging -- a method for mitigating interference with

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6/ IAC Interim Report at 67.

7/ Id. at 53.

terrestrial fixed and mobile users in the existing shared NVNG-MSS allocations -- will not be available as a technique to facilitate sharing in the future. NVNG-MSS proponents have admitted that this technique is unsuitable and undesirable for accommodating sharing because it precludes the transmission of "longer messages, data/information files, facsimile, and similar services" which the NVNG-MSS providers intend to offer in the future. (See Document 8-3/18, Working Group A of Task Group 8/3, Toronto, July 1994; and IAC Interim Report at 57 to the effect that additional allocations are needed because "existing allocations are unable to support transmission of longer messages, data/information files, facsimile and similar services.")

In summary, AAR believes that the United States should neither advocate nor support any reallocation of IWG-2's Priority Two bands unless and until comprehensive and conclusive sharing studies have first been completed, taking into account the following:

- the congested nature of the land mobile bands and the recognition of Task Group 8/3 that sharing by NVNG-MSS systems will be "difficult" in those heavily used bands;

- the limited scope of sharing studies conducted to date;

- the proposed offering by MSS providers of services of longer duration (e.g., file transfers and facsimile transmissions) than have been proposed for the first generation of NVNG-MSS systems; and

- the increasing use of land mobile frequencies for data communications purposes.

Because the feasibility of sharing in these bands has not yet been established, the U.S. railroad industry and other incumbent terrestrial users of this spectrum -- and the general public whom they serve -- could be seriously, directly and adversely affected by reallocation of the Priority Two bands for co-primary NVNG-MSS use. Unless and until it has been established that sharing by NVNG-MSS will not compromise the use of this spectrum by the existing users of these bands, the Commission should not advocate or support the use of these bands by NVNG-MSS at WRC-95.

III. Additional Terrestrial Land Mobile Allocations

Informal Working Group No. 6 ("IWG-6") of the IAC has noted that a potentially unique opportunity is about to arise for the 380-399.9 MHz bands because some administrations have recently indicated a willingness to allow civilian public safety use of the spectrum.[8/] AAR supports the farsighted proposal by the IWG-6 to identify spectrum near 400 MHz for public safety

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8/ IAC Interim Report at 224.

applications and urges that it be expanded to include railroad use.

As described above, radio communications networks play a vital safety role in the operation of railroads in the U.S. The railroads deploy and depend on a sophisticated and comprehensive inter-related radio communications network consisting of both mobile and fixed point-to-point communications systems and facilities. With regard to fixed communications facilities, the railroads use private microwave systems to monitor and control more than 1.2 million freight cars on more than 215,000 miles of track. For example, microwave systems carry information regarding train signals and the remote switching of tracks and routing of trains that are necessary for the safe operation of trains on rights-of-way and through depots and freight yards. These systems also relay critical telemetry data from trackside defect detectors located throughout the rail network. Information about damaged rails and overheated wheels and bearings is automatically transmitted from these detectors via mobile radio links to engineers in trains, who can then take the necessary actions to prevent derailments; and via fixed microwave links to dispatchers in distant locations, who are required to know the status of the equipment along the routes for which they are responsible.[9/]

9/ Other radio based detectors the railroads use include dragging equipment, wheel impact, high/wide, rock/land slide, flood and bridge status detectors.

As described above, the railroad industry is a major user of land mobile radio communications. The railroads operate mobile radio facilities on 91 channels between 160.215 and 161.656 MHz and on 10 channels in the 450-470 MHz range.[10/] On locomotives and rail equipment, along railroad tracks and in stations, terminals and train yards across the nation, railroads currently utilize about 16,400 base stations, 40,000 mobile radios, 125,000 portable radios, 5,500 defect detectors, 21,000 end-of-train and head-of-train devices, and almost 35,000 locomotive mobiles. The current value of the railroad industry's land mobile radio facilities is estimated to be about $576 million.

Since the 1940's when the FCC established the Railroad Radio Service, the railroads have used land mobile frequencies for traditional functions such as end-to-end and wayside point-to-train communications. Mobile radio units with dedicated radio channels permit communications among dispatchers, yard crews, switch crews, signal technicians, mechanical and engineering crews and other personnel. Virtually all railroad employees involved in operations carry their own portable radios, in addition to using mobile radios installed in the railroads' vehicular fleets. Further mobile units operating on channels

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10/ The frequencies allotted to the Railroad Radio Service are listed in Section 90.91(b) of the Commission's rules. 47 C.F.R. § 90.91(b). There are three channel pairs devoted to use by the railroads and seven channel pairs available to the railroads on a shared basis with other users in the 450 to 470 MHz band; these frequencies are used by the railroad industry primarily for telemetry functions.

with telephone interconnect capability permit ubiquitous communication throughout the public switched network.

In light of these important safety-related functions of radio communications affecting train movements and other aspects of railroad operations, it is appropriate to include railroad communications within the category of public safety communications services that will be eligible for this portion of the spectrum. Because railroads currently occupy nearby portions of spectrum, this proposed allocation would also be cost efficient in terms of necessary equipment, engineering and frequency coordination. Such an allocation would preserve and enhance the railroads' ability to ensure safety to persons and property, as well as to enhance reliable system operations.

IV. CONCLUSION

The railroads have a vital interest in the U.S. government's preparation for the upcoming WRC-95. Two issues of particular concern for the railroads are the proposals by the NVNG-MSS users relating to additional allocations below 1 GHz range and the possibility of additional terrestrial land mobile allocations. With regard to the portion of the IAC Interim Report concerning MSS allocations below 1 GHz, AAR urges the Commission not to advocate or support co-primary use by the NVNG-MSS of the Priority Two bands identified by the IWG-2. The IWG-2 characterization of these bands as "shareable" is premature in

light of the inadequacy of prior sharing studies and the congested nature of the bands.

AAR supports the proposal by IWG-6 to identify spectrum near 400 MHz for public safety applications. The safety functions of the railroads' communications network makes the railroad industry a logical candidate for inclusion among the users recommended by IWG-6.

Respectfully submitted,

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March 6, 1995

Attachment

Railroad Mobile Radio Statistics

Typical Railroad Mobile Radio Communication Systems by Band of Frequencies

System	RF Band
Overhead crane control	72 MHz
Dispatcher base stations	160 MHz
Locomotive radios	160 MHz
Track force radios	160 MHz
Defect detectors	160 MHz
Portable radios	160 MHz
Pagers	160 MHz
End Of Train (EOT) monitor and control	450 MHz
Centralized Traffic Control, control links	450 MHz
Base station control links	450 MHz
Distributed locomotive power	450 MHz

Quantities of Railroad Radios Utilized

Device	Quantity
Base Stations	16,360
Mobiles	40,351
Portables	124,689
Defect Detectors	5,484
EOT/HOT Devices	21,463
Locomotive Radios	34,731
Track Equipment Radios	5,591
Distributed Locomotive Power	860
Total	**249,529**

CERTIFICATE OF SERVICE

I, Beverly J. Magnone, hereby certify that on this 6th day of March, 1995, copies of the foregoing "Comments of the Association of American Railroads" were mailed, postage prepaid, to the following:

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